

HYPERNUMBERS AND OTHER EXOTIC STUFF



(1) MORE ON THE "ARITHMETICAL" SIDE

Arborescent numbers: higher arithmetic operations and division trees - Henryk Trappmann
http://eretrandre.org/rb/files/Trappmann2007_81.pdf

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Isodual Theory of Antimatter with applications to Antigravity, Grand Unification and Cosmology

<https://www.amazon.com/Isodual-Theory-Antimatter-applications-Antigravity/dp/1402045174> (book)

Studies on Santilli's Isonumber Theory - Arun S. Muktidobh - <http://www.santilli-foundation.org/docs/pdf2.pdf>

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<http://www.santilli-foundation.org/docs/elements-hadronic-mechanics-iii.compressed.pdf>

Initiating Santilli's Iso-Mathematics to Triplex Number... - Nathan O. Schmidt and Reza Katebi - <http://vixra.org/pdf/1308.0051v2.pdf>
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On quantum state of numbers - Bernard Le Stum & Adolfo Quirós - <https://arxiv.org/pdf/1310.8143.pdf>

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Baker–Campbell–Hausdorff formula - https://en.wikipedia.org/wiki/Baker%E2%80%93Campbell%E2%80%93Hausdorff_formula

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Circuits over sets of natural numbers - https://en.wikipedia.org/wiki/Circuits_over_sets_of_natural_numbers

The complexity of circuit evaluation over the natural numbers - Pierre McKenzie and Klaus Wagner

<http://www.iro.umontreal.ca/~mckenzie/Dagstuhl02.pdf>

The Unwinding Number - Robert M. Corless and David J. Jeffrey - <https://faculty.e-ce.uth.gr/akritas/CE102/p28-corless.pdf>

Distributive property examples - https://en.wikipedia.org/wiki/Distributive_property#Other_examples

A new arithmetic function of combinatorial significance - Solomon W Golomb - <https://core.ac.uk/reader/82660399>

A Noncommutative Version of the Natural Numbers - Tyler Foster - <https://arxiv.org/pdf/1003.2081.pdf>

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<https://www.amazon.com/Numerical-Polynomial-Algebra-Hans-Stetter/dp/0898715571>

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On Unconventional Division by Zero - Jakub Czajko

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<https://domingogomezmorin.wordpress.com/>

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A novel operation associated with Gauss' arithmetic-geometric means - Shinji Tanimoto

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Tight spans, Isbell completions and semi-tropical modules - Simon Willerton

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Hyperfields for Tropical Geometry I. Hyperfields and dequantization - Oleg Viro

<https://arxiv.org/pdf/1006.3034.pdf> (see section "6. Tropical addition of complex numbers")

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<https://www.cs.du.edu/~petr/milehigh/2013/Koeplinger.pdf>

Linear Numeral System - Ian Mackie - <http://www.ianmackie.com/papers/linns.pdf>

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Zot-Binary: a new numbering system with an application on big-integer multiplication – Shahram Jahani and Azman Samsudin
<http://www.jatit.org/volumes/Vol48No1/5Vol48No1.pdf>

Decimal Fractions - https://en.wikipedia.org/wiki/Simon_Stevin#Decimal_fractions

A Number System with Continuous Valued Digits and Modulo Arithmetic - Aryan Saèd, Majid Ahmadi and Graham A. Jullien -
https://www.academia.edu/13000520/A_number_system_with_continuous_valued_digits_and_modulo_arithmetic

Hereditary Base notation - https://en.wikipedia.org/wiki/Goodstein%27s_theorem#Hereditary_base-n_notation

New Arithmetic Algorithms for Hereditarily Binary natural numbers - Paul Tarau

<https://www.cse.unt.edu/~tarau/research/2014/HBinX.pdf>

Predicting Improper Fractional Base Integer Characteristics - Billy Dorminy - <http://educ.jmu.edu/~lucassk/Papers/DorminyFracBase.pdf>

Horus Eye Fractions - https://en.wikipedia.org/wiki/Eye_of_Horus#Mathematics

Egyptian geometry - https://en.wikipedia.org/wiki/Egyptian_geometry

Ancient Egyptian units of measurement - https://en.wikipedia.org/wiki/Ancient_Egyptian_units_of_measurement

Red auxiliary number - https://en.wikipedia.org/wiki/Red_auxiliary_number

Finger Binary - https://en.wikipedia.org/wiki/Finger_binary

Nemeth braille - https://en.wikipedia.org/wiki/Nemeth_Braille

A History of Mathematical Notations (Dover Books on Mathematics)

<https://www.amazon.com/History-Mathematical-Notations-Dover-Mathematics/dp/0486677664>

The Words of Mathematics : An Etymological Dictionary of Mathematical Terms used in English - Steven Schwartzman
<https://www.amazon.com/Words-Mathematics-Etymological-Dictionary-Mathematical/dp/0883855119>

J vocabulary- <https://code.jsoftware.com/wiki/NuVoc>

Bibi-binary - <https://en.wikipedia.org/wiki/Bibi-binary>

The Denormal Logarithmic Number System - Mark G. Arnold Sylvain Collange
https://www.researchgate.net/publication/262371524_The_Denormal_Logarithmic_Number_System

The generalized golden proportions, a new theory of real numbers, and ternary mirror-symmetrical arithmetic - Alexey Stakhov
<http://fs.unm.edu/SN/TheGeneralizedGolden.pdf>

Construction of Algorithms for Parallel Addition - Jan Legersky and Milena Svobodová
https://jan.legersky.cz/talks/ConstructionParAddAlg_WorkshopOnAutomaticSequences.pdf
On-line algorithms for multiplication and division in real and complex numeration systems – Marta Brzicová, Christiane Frougny, Edita Pelantová and Milena Svobodová - <https://arxiv.org/abs/1610.08309v5>

Computing with Exact Real Numbers in a Radix-r System - Alexander Kaganovsky
https://www.researchgate.net/publication/220368828_Computing_with_Exact_Real_Numbers_in_a_Radix-r_System

A variant of Ostrowski numeration - Emmanuel Cabanillas - <https://arxiv.org/pdf/1904.01874v2.pdf>

LCM number system - https://oeis.org/wiki/LCM_numeral_system && Primorial - https://oeis.org/wiki/Primorial_numeral_system
Factorial number system - https://oeis.org/wiki/Factorial_numeral_system && https://en.wikipedia.org/wiki/Factorial_number_system
Combinadic - <http://www.thefullwiki.org/Combinadic>

Society's "Ring of Truth" - John A. Shuster - https://www.researchgate.net/publication/363053086_Society's_Ring_of_Truth

Typographical Number Theory - https://en.wikipedia.org/wiki/Typographical_Number_Theory

Gödel numbering - https://en.wikipedia.org/wiki/G%C3%B6del_numbering

Octomatics number system - <http://octomatics.org/>

Sandpiles - Luis David Garcia-Puente - <http://people.reed.edu/~davidp/> && <https://www.youtube.com/watch?v=1MtEUErz7Gg>

Location arithmetic - https://en.wikipedia.org/wiki/Location_arithmetic

Yupana - <https://en.wikipedia.org/wiki/Yupana> && Yupana Inka en Matergia! - <https://www.youtube.com/watch?v=gTBEqlkhGSQ>
Japan's ancient secret to better cognitive memory (soroban) - BBC REEL - <https://www.youtube.com/watch?v=s6OmqXCsYt8>

...some can be found in the following wikipedia links :

https://en.wikipedia.org/wiki/List_of_numeral_systems#By_culture/_time_period
https://en.wikipedia.org/wiki/Category:Non-standard_positional_numeral_systems
https://en.wikipedia.org/wiki/Non-standard_positional_numeral_systems

(4) NUMERALS BEYOND NUMERIC

Facial Action Coding System - Carl-Herman Hjortsjö, Paul Ekman and Wallace V. Friesen
https://en.wikipedia.org/wiki/Facial_Action_Coding_System#Codes_for_action_units

Notación de apreciación de intensidad emocional y partitura emocional - Susana Bloch
<https://www.casadellibro.com/ebook-surfeando-la-ola-emocional-ebook/9789568601287/2108202>

Respiratory patterns - http://onlinedpcfatalog.com/images/pdf/albaemoting.c11-2_1.jpg
Alba Emoting - https://en.wikipedia.org/wiki/Susana_Bloch#Alba_Emoting

Plutchik's Wheel of emotions - https://en.wikipedia.org/wiki/Emotion_classification#Plutchik's_wheel_of_emotions
Interactive wheel - <https://www.6seconds.org/2022/03/13/plutchik-wheel-emotions/>

Heartmath - Doc Lew Childre Jr. - <https://www.heartmath.com/science/>

Emojitocode (code learning with emojis) - <https://www.emojicode.org/> && Emojipedia - <https://emojipedia.org/>

Laban notation - <https://en.wikipedia.org/wiki/Labanotation>
Knust's Dictionary of Kinetography Laban - <https://knustdict.netlify.app/entries>

Geometrography - <https://en.wikipedia.org/wiki/Geometrography>

A Compiler for 3D Machine Knitting - <https://la.disneyresearch.com/wp-content/uploads/A-Compiler-for-3D-Machine-Knitting-Paper.pdf>

Algoritmo del cortejo humano, heterosociabilidad y diálogo venusiano

MAX-VA-CUA-RO Secuenciado - Equipo de Seducción Científica - <https://dinamicassociales.com/>
Las 3 C's y macrohabilidades del Δ Helio - Equipo de Psicología Heterosocial - <https://www.egolandseducion.com/>

Genealogical numbering systems - https://en.wikipedia.org/wiki/Genealogical_numbering_systems
Symbols and diagrams of the Family Tree - <https://en.wikipedia.org/wiki/Genogram#Symbols>
Six basic patterns of kinship - https://en.wikipedia.org/wiki/Kinship_terminology#Six_basic_patterns_of_kinship
WikiTree (a wiki for genealogists) - <https://www.wikitree.com/>

Reading fluids circuit diagrams : hydraulic & pneumatic symbols
<https://www.valmet.com/media/articles/up-and-running/reliability/FRFluidDwgs1/>
Electrical, pneumatic and logic symbols
<https://www.festo-didactic.com/ov3/media/customers/1100/00525179001075223667.pdf>
A Primer on Basic on Basic Hydraulic and Pneumatic Symbols
<https://3dinsider.com/basic-basic-hydraulic-and-pneumatic-symbols/>

Crash Course in Quantum Computing Using Very Colorful Diagrams - Rishabh Anand
<https://towardsdatascience.com/quantum-computing-with-colorful-diagrams-8f7861cfb6da>
Demystifying Quantum Gates One Qubit At A Time - Jason Roell
<https://towardsdatascience.com/demystifying-quantum-gates-one-qubit-at-a-time-54404ed80640>
Quantum Circuit Diagrams - <https://stem.mitre.org/quantum/quantum-concepts/quantum-circuit-diagrams.html>
Quantum logic gate - https://en.wikipedia.org/wiki/Quantum_logic_gate#/media/File:Quantum_Logic_Gates.png

Erdős number - https://en.wikipedia.org/wiki/Erd%C5%91s_number
Erdős number project - <https://sites.google.com/oakland.edu/grossman/home/the-erdoes-number-project>

Feynman diagram - https://en.wikipedia.org/wiki/Feynman_diagram

Frege Notation - https://en.wikipedia.org/wiki/Begriffsschrift#Notation_and_the_system

Xenharmonic (a wiki about musical tuning) - <https://en.xen.wiki/>

Universal Script - Matthew DeBlock - <http://www.dscript.org/> (Uscript is universal logographic language based on math and physics)
Kelen Ceremonial Interlace Alphabet - <https://www.terjemar.net/kelen/lajathin.php>
Nato phonetic alphabet - https://en.wikipedia.org/wiki/NATO_phonetic_alphabet Q-code https://en.wikipedia.org/wiki/Q_code

Cookbook:Units of measurement - https://en.wikibooks.org/wiki/Cookbook:Units_of_measurement
Mateschef: Un sofrito de números y formas para chefs y gourmets - Claudi Alsina
<https://www.amazon.com/Mateschef-sofrito-n%C3%BAmeros-formas-gourmets/dp/8434422719>

QUANTUM-LANGUAGE-PARSE-SYNTAX-GRAMMAR (<https://dwmic.com/>)
(an exotic grammar obtained after squashing an assembly programmer against a judge)
https://en.wikipedia.org/wiki/David_Wynn_Miller#Constructed_language_and_linguistic_theories
<https://github.com/ismore/MathematicalInterfaceForLanguage/blob/master/README.md>
: Russell-Jay: Gould. - <https://www.youtube.com/channel/UC2FPVSe66WpLdfoiQem4FzA/videos>
:QUANTUM-GRAMMAR-CHANNEL: - <https://www.youtube.com/c/QUANTUMGRAMMARCHANNEL/videos>

Neuro-optometry - Deborah G Zelinsky - <https://mindeye.com/research/>
Pen and paper exercises - Donalee Markus - <https://www.designsforstrongminds.com/paper-exercises>
Conference for the American Optometric Association - Clark Elliott - <https://www.youtube.com/watch?v=LXCoOqSLYWw>
Parents with Autism: Neuroplasticity in Action - <https://www.youtube.com/watch?v=Ak7A6cMrrQM>

Lin4Neuro (neuroimaging) - https://www.nemotos.net/?page_id=29
The End of Mental Illness: How Neuroscience Is Transforming Psychiatry - Daniel G. Amen
<https://www.amazon.com/End-Mental-Illness-Neuroscience-Transforming/dp/1496438159>
The most important lesson from 83,000 brain scans - <https://www.youtube.com/watch?v=esPRsT-lmw8>

Aproximate number system - https://en.wikipedia.org/wiki/Approximate_number_system
Numerical cognition - https://en.wikipedia.org/wiki/Numerical_cognition
Number sense in animals - https://en.wikipedia.org/wiki/Number_sense_in_animals
Together with dyscalculia, ageometresia, dysgraphia, financial illiteracy
Innumeracy - https://en.wikipedia.org/wiki/Innumeracy_%28book%29
Hypernumeracy - <https://www.andnextcomesl.com/2019/10/hypernumeracy.html>

WikiOdour (a wiki about odor metric) - Scentroid - <https://scentroid.com/wikiodour/>
NASA's Chief Sniffer - https://www.youtube.com/watch?v=oRdgmN_Yq3U

The perfume maker in Dubai Gold Souq who can create any fragrance - <https://www.youtube.com/watch?v=5WIu0FxyPw>

(5) TRIANGLE ZONE

A treatise on the analytical geometry of the point, line, circle, and conic sections, containing an account of its most recent extensions, with numerous examples - John Casey - <https://archive.org/details/cu31924001520455>
Modern triangle geometry - https://en.wikipedia.org/wiki/Modern_triangle_geometry

Trilinear Coordinates - <https://mathworld.wolfram.com/TrilinearCoordinates.html>

https://en.wikipedia.org/wiki/Incenter#Trilinear_coordinates

Transformation of trilinear and quadrilateral to and from cartesian coordinates - John B Mertie
http://www.minsocam.org/ammin/AM49/AM49_926.pdf

Special Isocubics in the Triangle Plane - Jean-Pierre Ehrmann and Bernard Gibert
<https://bernard-gibert.pagesperso-orange.fr/files/Resources/SITP.pdf>

The Encyclopedia of Triangle Centers - <https://faculty.evansville.edu/ck6/encyclopedia/ETC.html>

Bicentric Pairs of Points and Related Triangle Centers - Clark Kimberling - <https://forumgeom.fau.edu/FG2003volume3/FG200303.pdf>

Barycentric Coordinates - <https://mathworld.wolfram.com/BarycentricCoordinates.html>

Green Coordinates - Yaron Lipman, David Levin and Daniel Cohen-Or https://www.wisdom.weizmann.ac.il/~ylipman/GC/gc_techrep.pdf

Harmonic Coordinates - Tony DeRose and Mark Meyer - <https://graphics.pixar.com/library/HarmonicCoordinates/paper.pdf>

The barycentric conspiracy - Fabian "ryg" Giesen - <https://fgiesen.wordpress.com/2013/02/06/the-barycentric-conspiracy/>

Areal Coordinates - <https://mathworld.wolfram.com/ArealCoordinates.html>

Approach on area coordinate, volume coordinate and their usage in true 3dgis - Gang Liao, Qingyuan Li, Xu Chen and Jiarong Zheng

https://www.researchgate.net/publication/242605764_APPROACH_ON_AREA_COORDINATE_VOLUME_COORDINATE_AND THEIR_SAGE_IN_TRUE_3DGIS

Areal Co-ordinate Methods in Euclidean Geometry - Tom Lovering - <https://bmos.ukmt.org.uk/home/areals.pdf>

Synergetics Coordinates - <https://mathworld.wolfram.com/SynergeticsCoordinates.html> (Clifford J. Nelson 's Wolfram Notebooks)

Buckminster Fuller Notebooks - <https://library.wolfram.com/infocenter/MathSource/600>

Bucky Number Mandelbrot - <https://library.wolfram.com/infocenter/MathSource/428/>

Four Triangle Fractals using Bucky Numbers and Synergetics Coordinates - <https://library.wolfram.com/infocenter/MathSource/754/>

Quadray coordinates - https://en.wikipedia.org/wiki/Quadray_coordinates

Polysign Numbers - Tim Golden - <http://www.bandtechnology.com/PolySigned/index.html>

Pacman Product for Polysigned numbers - Tanaka - <https://archive.org/details/polysignedpacmanproduct>

On intertwined polysigned p3 and equatorial geometry - Tanaka - https://archive.org/details/intertwined_polysigned_p3_on_the_equator

Notas Sobre Polisignos Y Objetos Tertiarios - Kujonai - <https://vixra.org/pdf/2002.0570v1.pdf>

Understanding Polysign Numbers the Standard Way - Hagen von Eitzen - <http://www.von-eitzen.de/math/PolysignNumbers.pdf>

Lua Digital: Matemática (Portuguese Edition) Roberto Siqueira Costa

<https://www.amazon.com/Lua-Digital-Roberto-Siqueira-Costa-ebook/dp/B0118HD4V0>

Chromatic Numbers and Ternary Algebra - Kavosh Havaledarnejad

https://www.academia.edu/25274352/Chromatic_Numbers_and_Ternary_Algebra

An Euler phi function for the Eisenstein integers and some applications - Emily Gullerud, Aba Mbirika - <https://arxiv.org/abs/1902.03483>

Tropical projective space - https://en.wikipedia.org/wiki/Tropical_projective_space

Pohlke's theorem - https://en.wikipedia.org/wiki/Pohlke's_theorem

On anharmonic co-ordinates - William Rowan Hamilton - <https://www.emis.de/classics/Hamilton/Anharm.pdf>

Anharmonic coordinates - Henry William Lovett Hime - <https://archive.org/details/anharmoniccoordi00himerich>

Triangular root - https://en.wikipedia.org/wiki/Triangular_number#Triangular_roots_and_tests_for_triangular_numbers

Hedronometry (Dimensionally enhanced Trigonometry) - Blue the hedronometer - <http://daylateanddollarshort.com/mathdocs/>

Trigonometry of a tetrahedron - https://en.wikipedia.org/wiki/Trigonometry_of_a_tetrahedron

Three dimensional geometry, ZOME, and the elusive tetrahedron

https://www.maths.unsw.edu.au/sites/default/files/3dgeom_zome_tetrahedron_seminar.pdf

La géométrie des tétraèdres - Philippe Tilleul

A New and Very Long Proof of the Pythagoras Theorem - Kaushik Basu - <http://kaushikbasu.org/Pythagoras%206.pdf>

Ternary arithmetic, factorization, and the class number one problem - Aram Bingham - <https://arxiv.org/pdf/2002.02059v2.pdf>

Parallellogon - <https://en.wikipedia.org/wiki/Parallellogon>

Trigonal trapezohedral honeycomb - https://en.wikipedia.org/wiki/Trigonal_trapezohedral_honeycomb

Rhombic dodecahedral honeycomb - https://en.wikipedia.org/wiki/Rhombic_dodecahedral_honeycomb

Maxicode - <https://en.wikipedia.org/wiki/MaxiCode>

Solid Geometry with Problems and Applications - H. E. Slaught and N. J. Lennes - <https://www.gutenberg.org/files/29807/29807-pdf.pdf>
Polyhedral angle - https://encyclopediaofmath.org/wiki/Polyhedral_angle

Cubic Pythagoras – Luis Teia (pythagoras with cubes instead of squares)

<https://wonderfulengineering.com/pythagoras-theorem-has-been-upgraded-to-3d-and-now-requires-a-120-page-proof/>

Geometry of the 3D Pythagoras' Theorem - <https://www.youtube.com/watch?v=QWPuPX5DHFI>

<https://web.archive.org/web/20170922045632/http://www.ccsenet.org/journal/index.php/jmr/article/viewFile/64646/34833>

Fermat's Theorem – a Geometrical View

https://www.researchgate.net/profile/Luis-Teia/publication/312607399_Fermat's_Theorem_-_a_Geometrical_View/links/58863f6d92851c21ff4d5825/Fermats-Theorem-a-Geometrical-View.pdf

Heavenly Mathematics The Forgotten Art of Spherical Trigonometry - Glen Van Brummelen

<https://www.amazon.com/Heavenly-Mathematics-Forgotten-Spherical-Trigonometry/dp/0691175993>

The Theorem of Trithagoras; Pythagoras is for Squares - Dave Mitchell - <https://latticeabyrinths.wordpress.com/2018/01/13/the-theorem-of-trithagoras-pythagoras-is-for-squares-the-mathsjam-2017-five-minute-presentation/>

Pythagoras theorem variation - Claudi Alsina - <http://claudialsina.com/wp-content/uploads/2016/10/newpythlikethms.pdf>

Extended Pythagoras Theorem Using Hexagons - Luis Teia

https://www.researchgate.net/publication/356441337_Extended_Pythagoras_Theorem_Using_Hexagons

Extended PythagorasTheorem using Triangles, and its Applications to Engineering - Luis Teia

https://www.researchgate.net/publication/357896374_Extended_Pythagoras_Theorem_using_Triangles_and_its_Applications_to_Engineering

Duocode, a parallel of the unicode standard for hexagonal typesetting - Alexander Egorov

Hex Grid Geometry for Game Developers - Herman Tulleken - <http://gamelogic.co.za/downloads/HexMath2.pdf>

Polynumbers, Norms, Metrics, and Polyingles - R R Aidagulov and M V Shamolin

https://www.researchgate.net/publication/270597014_Polynumbers_Norms_Metrics_and_Polyingles

Finsler Spaces, Bingles, Polyingles, and Their Symmetry Groups - R. R. Aidagulov and Maxim V. Shamolin

https://www.researchgate.net/publication/270597384_Finsler_Spaces_Bingles_Polyingles_and_Their_Symmetry_Groups

Taxicab Angles and Trigonometry - Kevin Thompson and Tevian Dray - <https://arxiv.org/pdf/1101.2917.pdf>

Divine Proportions: Rational Trigonometry to Universal Geometry - Norman J. Wildberger

<https://www.amazon.com/Divine-Proportions-Rational-Trigonometry-Universal/dp/097574920X>

Wildberger 's channel - <https://www.youtube.com/user/njwildberger>

Rational trigonometry - https://handwiki.org/wiki/Rational_trigonometry

Pascal simplex - https://en.wikipedia.org/wiki/Pascal's_simplex

Using Chinese Dumbass Notation to Find Algebraic Identities Daniel - Liu Daniel Liu

https://www.academia.edu/11576181/Using_Chinese_Dumbass_Notation_to_Find_Algebraic_Identities

Introduction to the General Trigonometry in Euclidian 2D-space - Claude Ziad Bayeh

<http://www.wseas.us/e-library/transactions/mathematics/2012/53-882.pdf>

Plimpton 322 is Babylonian exact sexagesimal trigonometry - Daniel Francis Mansfield and Norman Wildberger

https://www.researchgate.net/publication/319286288_Plimpton_322_is_Babylonian_exact_hexagesimal_trigonometry

Old Babylonian mathematics and Plimpton 322: A new understanding of the OB tablet Plimpton 322

<https://www.youtube.com/watch?v=L24GzTaOll0>

(6) SOFTWARE ZONE

DATA STRUCTURES*

Treesheet (tree-like spreadsheet) - <http://strlen.com/treesheets/>

Blockchain (demo) - <https://andersbrownworth.com/blockchain/>

Heimer (mind map) - <https://github.com/juzzlin/Heimer>

DAS-UI <https://das-ui.firebaseioapp.com/> && <https://szymonkaliski.com/writing/2017-09-08-building-das-ui/>

Enso (diagrammatic coding) - <https://enso.org/language>

Orca (procedural sequencers) - <https://github.com/Hundredrabbits/Orca>

Taichi (spatially sparse multi-level data structures) - <https://github.com/taichi-dev/taichi>

Rasdaman (datacube and arrays) - <http://www.rasdaman.org/wiki>

Categorical Data (data-related tasks using category theory) - <https://www.categoricaldata.net/>
Egison (efficient non-linear pattern matching with backtracking for non-free data type) - <https://www.egison.org/>
Eve (uniform data-processing) - <http://witheve.com/>
Fluidinfo (columnar shareable data) - <https://github.com/fluidinfo> && <https://en.wikipedia.org/wiki/Fluidinfo>
MentDB (world wide Data) - https://www.mentdb.org/mentdb_weak.html

STRUCTS* WITH META

Bedrock (meta-distro) <https://bedrocklinux.org/>
Funtoo (meta-distro) - <https://www.funtoo.org/Welcome>
T2 System Development Environment (meta-distro) - <https://t2sde.org/index.cgi>
DL Linux (meta-meta-distro) - <https://web.archive.org/web/20181221164035/https://www.sudosatirical.com/articles/dl-linux-0-0-1-released/>
Black (reflective) - <http://pllab.is.ocha.ac.jp/~asai/Black/>
Terra (meta-programming) - <http://terralang.org/>
MetaL (meta-language) - <https://www.meta-language.net/faq.html#what>
Rinci (metadata specifications) - <https://metacpan.org/pod/Rinci#ABSTRACT>
Circle (meta-programming) - <https://www.circle-lang.org/>
Hackett (meta-programming) - <https://lexi-lambda.github.io/hackett/>
Elena (polymorphic code) - <https://github.com/ELENA-LANG/elena-lang/wiki/ELENA-Programming-Manual#overview>
Beluga (mechanizing meta-theory) - <https://www.cs.mcgill.ca/~complogic/beluga/index.html>
Hazel (incomplete programs) - <https://hazel.org/>
Autohotkey (gui and scripting automation for windows) - <https://www.autohotkey.com/>
Rosie Pattern (beyond regex) - <https://rosie-lang.org/about/>
Antipurity (self-aware interpreter) - <https://github.com/Antipurity/conceptual>
Multicompiler (defensive compiler) - <https://immunant.com/blog/2018/09/multicompiler/>
Avail (articulate programming) - <https://www.availlang.org/about-avail/introduction/index.html>
Push (evolutionary computing) - <https://faculty.hampshire.edu/lspector/push.html>
Wyvern (built-in skill for large-scale design) - <https://wyvernlang.github.io/>
Gen (probabilistic) - <https://probcomp.github.io/Gen/>
Pyro (probabilistic) - <https://pyro.ai/>
Rascal (meta-programming) - <https://www.rascal-mpl.org/>
Pharo (software as objects, immersive) - <https://pharo.org/features>

SOUND*

Gwion - <https://gwion.github.io/Gwion/>
Kronos vesaronilo - <http://kronos.vesanorilo.com/>
Supercollider - <https://supercollider.github.io/>
Faust - <https://faust.grame.fr/>
Chuck - <http://chuck.cs.princeton.edu/>

NETWORKING*

Live Raizo (network simulation) - <https://sourceforge.net/projects/live-raizo/>
P4 (implement specific network behaviours) - <https://p4.org/>
Helena (browsing automation) - <https://helena-lang.org/>
Volumia (rpg-like browser) <http://www.volumia.com/>
Gather (rpg-like meetings) - <https://www.gather.town/>
Lynx (textual browser) - [https://en.wikipedia.org/wiki/Lynx_\(web_browser\)](https://en.wikipedia.org/wiki/Lynx_(web_browser))
Beaker Browser (peer-to-peer Web browser) - <https://beakerbrowser.com/>
Nyxt browser (keyboard-driven browser) - <https://github.com/atlas-engineer/next>
Jolie (microservices) - <https://www.jolie-lang.org/>
Daphile (headless music server) - <https://www.daphile.com/>
Skywave linux (software defined radio servers) - <https://skywavelinux.com/>
Gotenna (off-grid mobile mesh) - <https://gotenna.com/>
Manyverse (off-grid social networking) - <https://www.manyver.se/faq/what-is-manyverse>
p2p networking - <https://www.gnunet.org/en/> <https://zeronet.io/> <https://freenetproject.org/>
Eternal-september private news server (usenet) - <http://eternal-september.org/>
Aioe.org public news server (usenet) - <https://news.aioe.org/>
Fediverse (federated servers for web-publishing) - <https://en.wikipedia.org/wiki/Fediverse>

OPERATING SYSTEM*

XOD.IO (microcontrollers) - <https://xod.io/>
Elemental Processor SIMulator - <https://wepsim.github.io/>
Mikrocodesimulator MikroSim 2010 (microcode) - http://www.mikrocodesimulator.de/index_eng.php
Katai Struct (binary data structures) - <https://kaitai.io/>
Snowdrop OS (16-Bit Operating System) - <http://sebastianmihai.com/snowdrop/>
Turbo Rascal (design of 8-bit/16-bit games) - <https://lemonspawn.com/turbo-rascal-syntax-error-expected-but-begin/>

Tunguska (a ternary computer emulator) - Viktor Lofgren - <http://tunguska.sourceforge.net/>
The Trillium Architecture - Douglas W. Jones - <http://homepage.divms.uiowa.edu/~jones/ternary/trillium.shtml>
Red (full-stack) - <https://www.red-lang.org/p/about.html>
Racket - <https://racket-lang.org/> && Neverlang - <https://cazzola.di.unimi.it/neverlang2.html> (language creation)
Rescatux - <https://www.supergrubdisk.org/rescatux/> && Parted Magic - <https://partedmagic.com/> (OSes for rescue and recovery)
Minix - <https://www.minix3.org/> && 'An Open Letter to Intel' - <https://www.cs.vu.nl/~ast/intel/>
Los Procesadores Intel tienen un Secreto Misterio - <https://www.youtube.com/watch?v=CaLb7waR6eo>
Debian-hurd (debian over Hurd) - <https://www.debian.org/ports/hurd/> https://en.wikipedia.org/wiki/GNU_Hurd
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Ratpoison (Window Manager) - <https://www.nongnu.org/ratpoison/>
IceWM (Window Manager) - <https://ice-wm.org/>
RedoxOS - <https://doc.redox-os.org/book/ch01-06-how-redox-compares.html>
Linux From Scratch! - <https://www.linuxfromscratch.org/>

LANGUAGE*

Sono (linguistic study) - <https://github.com/Nallanti/Sono>
Quorum (evidence-oriented) - <https://quorulanguage.com/reference.html>
Inform7 (interactive narrative, textual adventures) - <http://inform7.com/>
Poliqarp (universal concordancer for large corpora) - <http://poliqarp.sourceforge.net/about.html>
Paper generator - https://en.wikipedia.org/wiki/Paper_generator

GRAPHICS*

Curv (mathematical methods for art design)- <https://github.com/curv3d/curv>
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Draw2D (diagrams) - <http://www.draw2d.org/draw2d/examples.html>
Threejs (creation of 3D content) - <https://threejs.org/manual/#en/fundamentals>
Video (video editing) - <https://lang.video/>

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Valentin Turchin - <https://pat.keldysh.ru/~roman/doc/Turchin/>

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<https://www.amazon.com/Diagnosing-System-Organizations-Stafford-Beer/dp/0471951366>

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<https://www.amazon.com/Beyond-Dispute-Invention-Team-Syntegrity/dp/0471944513>

Viable system model - https://en.wikipedia.org/wiki/Viable_system_model
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<https://www.amazon.com/Many-Grapes-Went-into-Wine/dp/0471942960>

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https://www.researchgate.net/publication/271917376_Engineering_cybernetics_60_years_in_the_making
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